

I. General Remarks Concerning This Response

Claims 1-20 are currently pending in the present application. No claims have been amended in this response. Reconsideration of the claims is respectfully requested.

5 The previous rejections under 35 U.S.C. § 102(e) have been withdrawn and new rejections have been substituted therefor. The previous Office action had indicated that claims 6, 15, 18, and 20 were objected to as dependent upon
10 rejected based claims but otherwise allowable; these claims have now been rejected.

II. Summary of Present Invention

15 The present invention is a method for deferred deletion of entries in a directory service backing store. Although shown as a preferred embodiment within the specification, the invention is not limited to a Lightweight Directory Access Protocol (LDAP) directory service provided with a DB/2 backing
20 store. As stated in the specification, the principles of the present invention may be practiced in other types of directory services, e.g., X.500, and using other relational database management systems, e.g., Oracle, Sybase, Informix, etc., as the backing store.

25 In either the present invention or the prior art, an entry in an LDAP directory is deleted using an SQL statement. In the prior art, the directory server responds to the delete entry statement by instituting a global lock on the database tables to ensure that data in those tables cannot be modified while the entry is being deleted from the directory. In
30 contrast, the present invention provides an enhanced delete operation whereby the entry is marked for deletion, and the actual deletion is completed at a later time.

More specifically, the present invention is a method for deleting an entry from a directory in which directory information is stored in a set of database tables; the deletion is initiated in response to a request to delete a directory entry. In response, the directory entry is tagged in some manner as being a deleted entry, preferably by setting the entry's creation time to a null value. If a search query is received thereafter, the method excludes tagged entries from search results that would otherwise satisfy the search query. At a periodic interval, the routine then searches for tagged entries, and references to the tagged entries are then deleted throughout the set of database tables. In this manner, the completion of the entry deletion operation is deferred to enable directory queries to be processed even if deleted entries have not yet been fully expunged from the directory.

III. 35 U.S.C. § 103(a)-Obviousness-Byrne et al. in view of Kennedy

The Office action has rejected claims 1-20 under 35 U.S.C. § 103(a) as unpatentable over Byrne et al., "Lightweight Directory Access Protocol (LDAP) Directory Server Cache Mechanism and Method", U.S. Patent No. 6,347,312 B1, filed 11/05/1998, issued 02/12/2002, in view of Kennedy, "System and method for managing electronic mail messages using a client-based database", U.S. Patent No. 6,134,582, filed 05/26/1998, issued 10/17/2000. This rejection is respectfully traversed.

The following is the rejection of independent claim 1 in its entirety:

Re claims 1 and 16, Byrne disclose a method for deleting entries from a directory in which directory information is stored in a set of database tables, comprising the steps of: responsive to a request to delete a directory entry (col. 4, lines 17-26 and see fig. 1 & 2).

Byrne fails to show tagging the directory entry in a first table.

Kennedy teaches tagging the directory entry in a first table (col. 11, lines 48-col. 12, lines 7 and see fig. 4A-4K). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Byrne by including tagging the directory entry in a first table, as taught by Kennedy, so the systems can remove or modify many entries that have been tagging the directory in the table. In this way, the systems enable management to save time and would not have to worry of any mistaking of deleting the entry (col. 3, lines 55-col. 4, lines 20).

Kennedy further discloses periodically searching for tagged entries in the first table during a cleanup process interval (col. 11, lines 48-col. 12, lines 8); and deleting references to the tagged entries throughout the set of database tables (col. 3, lines 55, col. 4, lines 20).

Applicant notes that Byrne et al. is assigned to the same assignee as the present patent application. Applicant readily admits that the system of Byrne et al. discloses some common features with the system disclosed by the present patent application, such as LDAP servers. However, Byrne et al. clearly does not disclose most of the claimed features of the present invention. Applicant first focuses on independent claim 1, which reads as follows:

1. A method for deleting entries from a directory in which directory information is stored in a set of database tables, comprising the steps of:
responsive to a request to delete a directory entry, tagging the directory entry in a first table;
periodically searching for tagged entries in the first table during a cleanup process interval; and
deleting references to the tagged entries throughout the set of database tables.

The rejection begins by stating that Byrne et al. discloses the first part of the first element of claim 1, i.e. "responsive to a request to delete a directory entry", and the rejection points to column 4 and Figs. 1 and 2 in Byrne et al. as supposedly teaching this feature. The subject matter in column 4 and Figs. 1 and 2 do not actually show this feature, but the feature is taught elsewhere in Byrne et al..

The rejection then implicitly admits that Byrne et al. does not teach most of the elements of claim 1 because the rejection proceeds to admit that Byrne et al. does not teach the second part of the first element of claim 1, i.e. "tagging the directory entry in a first table". The rejection states that Kennedy supposedly teaches this feature and the remaining elements in claim 1, which Applicant discusses further below.

In other words, the rejection relies upon the primary reference, Byrne et al., as teaching only a small part of the claimed invention, and the rejection then relies upon the secondary reference, Kennedy, for teaching the majority of the claimed features.

Applicant argues that the structure of the rejection is illogical. A typical rejection relies on the primary reference as teaching most of the claimed features; a typical rejection then relies on a secondary rejection as teaching a few features that can then be combined with the teachings in the primary reference in order to produce an obvious, improved version of a process or system that is somewhat similar to a process or system in the primary reference.

In the case of the present invention, the opposite approach is taken. The rejection argues that it would have been obvious for someone to take a database system comprising LDAP directories, i.e. as disclosed in Byrne et al., and then make numerous modifications to the system, i.e. with features

that are supposedly disclosed in Kennedy, in order to reach the claimed invention. Applicant asserts that the logical structure of the obviousness argument that is presented by the rejection requires far more substantial evidence in the prior art than a typical rejection for why one having ordinary skill in the art would have been motivated to make such heavy modifications to the system of Byrne et al. to include the supposedly disclosed features from the system of Kennedy.

However, the motivational statement that is presented in the rejection is itself completely illogical and unintelligible. The motivational statement states: "it would have been obvious ... to modify Byrne by including tagging the directory entry in a first table, as taught by Kennedy, so the systems can remove or modify many entries that have been tagging the directory in the table." Paraphrasing the motivational statement, the rejection seems to argue that it would have been obvious to modify the system of Byrne et al. to include a particular feature, i.e. tagging a directory entry, because then the system would be able to remove tagged entry. However, if the system of Byrne et al. is already able to remove entries, then it is not clear why one of ordinary skill in the art would have been motivated to modify the system of Byrne et al. to do something that it already possessed the ability to do. Applicant asserts that the circular reasoning in the rejection is completely improper.

The remainder of the motivational statement is equally perplexing. It appears that the rejection attempts to state another supposed advantage for the modification: "the systems enable management to save time and would not have to worry of any mistaking of deleting the entry". Applicant would argue that one having ordinary skill in the art would always be motivated when developing a database system to be careful

about mistakenly deleting records or entries in a database, so it is unclear what this motivation has to do with the claimed features. Moreover, the additional feature of tagging an entry does not by itself suggest anything about a delete operation, and the advantage of "saving time" appears to have been gleaned from Applicant's own disclosure; in other words, Applicant's own disclosure has been improperly used against the Applicant. Applicant asserts that the motivational statement is completely confusing, and the reference to the section of Kennedy at columns 3 and 4 does not discuss anything similar to this supposed advantage.

Unfortunately, the illogical structure of the rejection continues. The rejection then states: "Kennedy further disclose ...". In other words, a motivation is supposedly given as to why one having ordinary skill in the art would have supposedly combined a feature from the system of Byrne et al. with a feature from the system of Kennedy, as discussed above. Then, the rejection states that Kennedy supposedly discloses the second and third elements of claim 1. However, the rejection fails to argue why one having ordinary skill in the art would have been additionally motivated to combine the features in the second and third elements of claim 1, as supposedly taught by Kennedy, into the system of Byrne et al..

Moreover, Kennedy does not disclose many of the features of the present invention, notwithstanding the arguments presented by the rejection. As explained in the "Summary of the Invention" section of the reference, the system that is disclosed in Kennedy provides a client-server method for managing electronic mail messages that are stored within a local, client-side database and a remote, server-side database. During a client-server session, message-related information is retrieved from the server and stored in the

client-based database along with downloaded messages.

Indications are provided in the client-side database as to whether a message has been previously downloaded from the server and whether a copy of a message has been left on the

5 server. Expiration times can be set so that messages are deleted over time. In essence, the system allows some of the information to be stored at the client and/or the server, and the system acts to synchronize the information in the local database and the remote database. Additional detail about the
10 system of Kennedy is provided below within portions of the reference that have been recited by this response in arguments against the rejections.

Against the first element of claim 1, the rejection cites column 11, line 48, to column 12, line 7, of Kennedy in
15 support of an argument that Kennedy discloses the element. It is important to note that all of the claims in the present application are directed to a directory service or a method or a computer program product that involves a directory, but Kennedy does not mention a directory or a directory service
20 even once. Kennedy does not disclose a directory or a directory service, so it is not possible for Kennedy to disclose the element "tagging the directory entry in a first table" as recited in the first element of independent claim 1.

Dependent claims 2-5, 7, and 8 are dependent upon
25 independent claim 1 and include the elements of claim 1. Hence, because the combination of Byrne et al. and Kennedy does not disclose all of the features of independent claim 1 as required by a proper obviousness rejection, these references are also deficient against claims 2-5, 7, and 8.

30 Applicant also provides additional arguments concerning other deficiencies in the rejection of other claims besides independent claim 1. The following arguments essentially show

that the portions of Kennedy that have been cited against specific claim elements do not disclose the claim elements as argued by the rejection.

5 With respect to dependent claim 2, the rejection cites two sections (column 11, line 48, to column 12, line 8; and column 13, line 33, to column 14, line 68) of Kennedy in support of an argument that Kennedy discloses claim 2, which reads: "wherein the directory entry is tagged by setting its creation time to a given value". Applicant notes that, in
10 almost two columns of patent text, there are no features of the disclosed system that are even slightly similar to the claimed feature. The cited portions of Kennedy mention that a date and time field is compared against a preset period of time, and based on the results of the comparison, a "delete"
15 flag might be set. However, as should be apparent by a simple reading of the passage in Kennedy, the delete flag is separate from the date and time field; the date and time field is not used to indicate that the entry should be deleted.

20 With respect to dependent claim 3, the rejection cites the same two sections (column 11, line 48, to column 12, line 8; and column 13, line 33, to column 14, line 68) of Kennedy in support of an argument that Kennedy discloses the claim, which reads: "wherein the given value is a null value". Claim 3 is dependent on claim 2; Kennedy does not disclose the use
25 of a creation time as a delete tag, as required by claim 2, and Kennedy does not disclose that the creation time is set to a null value, as required by claim 3.

30 Against the first element of dependent claim 4, which comprises the element of "performing a search for directory entries that satisfy a search query", the rejection again cites a portion of Kennedy at column 13, line 66, to column 14, line 47; as noted above, Kennedy does not disclose the use

of directory entries. Against the second element of dependent claim 4, which comprises the element of "excluding tagged entries from search results that otherwise satisfy the search query", the rejection cites a portion of Kennedy at column 21, line 54, to column 23, line 18. The basis of argument for this rejection is entirely unclear because the rejection cites approximately one and a half columns of patent text that discusses a method of assembling a message that comprises multiple message parts; nothing in the cited portion even remotely approaches a feature that is similar to the claimed element. Applicant also notes that the cited portion appears to be randomly selected and randomly applied against the claim element because the cited portion includes the concluding paragraphs of the patent and the first several lines of the first claim.

Against dependent claim 5, which states that "the step of excluding tagged entries includes modifying an SQL query to exclude rows having a null change creation", the rejection cites a portion of Kennedy at column 8, line 51, to column 9, line 63, which is provided immediately below (Applicant herein recites the entire section of more than a column of patent text to emphasis what appears to be a random selection of a portion of the reference because it has no relevance to the claimed feature):

In FIG. 3, a remote computer 49 operates as a server and generally includes an e-mail server application 110, a local store 115, and a client manager control 120. In an exemplary embodiment, the server 49 is a POP3 mail server, but it will be appreciated that the present invention is not limited to this type server. In the exemplary embodiment, the client 20 includes a local message store 38, a database 39, an e-mail program module 36, and a message manager program module 37 for facilitating message management and operation of the database 39.

With respect to the exemplary embodiment, the client 20 provides two modes of operation in connection with the server 49. These modes are a default mode and a "leave on server" mode. In the default mode, the client 20 sends a delete command to the server 49 to delete a message from the server 49 after the message has been downloaded to the client 20. In the "leave on server" mode, the client does not send a delete command to the server 49 after the message has been downloaded to the client 20, thereby allowing the message to remain on the server 49 although the message has been downloaded. The mode of operation generally is selected based on user-preference. Advantageously, the present invention optimizes the management of messages when the client 20 is in the "leave on server" mode, as will be described below in connection with FIGS. 4-8.

The server 49 houses any e-mail messages from clients in the local store 115 while awaiting transmission to an appropriate destination. The e-mail server application 110 forwards messages over the WAN 52 from a sender client (not shown) to the client 20, upon request by the client 20. The client manager control 120 is a program used to set up computer systems, such as clients 1, 11a, 11b, 11c (FIG. 1), and 20 (FIG. 2) on the network. The client manager control 120 can also specify the addresses of the computer systems located on the network. In addition, the client manager control 120 typically facilitates the management of incoming and outgoing messages on the server. When a request for a message is made by the client 20 to the server 49, the e-mail server application 110 on the server 49 responds by retrieving the message from the local store 115 on the server 49 and by transmitting the message over the WAN 52 to the client 20. The message is then downloaded into the local message store 38 located at the client 20. The local message store 38 houses all downloaded messages from the server 49.

During the download operation, data fields are populated within the database 39 with message-related information associated with the downloaded message. The information includes a unique identifier for identifying the message, a session identifier for indicating the particular order in which the message is retrieved from the server, a message size and other message-related information that will be described in greater detail herein below with respect to FIGS. 4-8. The e-mail program module 36 provides facilities for creating, addressing, sending, receiving, and forwarding messages,

while the message manager program module 37 manages messages during download and deletion operations utilizing the database 39. The use of the database 39 is described in greater detail in connection with FIGS. 4a-4k, collectively described as FIG. 4.

With continuing reference to FIGS. 1-3 and now turning to FIGS. 4a-4k, a client-based database used in connection with the exemplary program module 37 is illustrated. FIGS. 4a-4k illustrate a client-based database for archiving messages in accordance with an exemplary embodiment of the present invention.

The database 39 can include multiple data fields, organized within an array structure, for maintaining message-related information. To support download and delete operations, typical data fields of the database include: a session identifier (session ID) 200, a unique identifier (UIDL) 205, a message size 210, an entry identifier (EID) 215, a receive date and time 220, which is the local machine time, an "on server" flag 225, a "download" flag 230, and a "delete" flag 235. Message re-assembly operations can be supported by adding to the database structure certain data fields corresponding to portions of a MIME-compatible message, such as a message group identifier (message group ID) 240, a message part number 245, and a total parts number 250.

It is entirely unclear how this passage discloses anything remotely related to the modification of an SQL query.

With respect to independent claims 9, 14, and 19, these claims are similar to independent claim 1 and dependent claim 4 in that claims 9 and 19 are a combination of the elements of claims 1 and 4 and claim 14 is a subset of the combination of claims 1 and 4. The rejection merely cites the same portions of Byrne et al. and Kennedy against claims 9, 14, and 19 that were cited against claims 1 and 4. Applicant has refuted these arguments above with respect to claims 1 and 4, and Applicant maintains that independent claims 9, 14, and 19 are not obvious in view of Byrne et al. and Kennedy for the same reasons.

With respect to independent claim 16, this claim is similar to independent claim 1 in that independent claim 1 is

a method claim, whereas independent claim 16 is directed to a computer program product comprising means for performing the steps of a process similar to that claimed in claim 1.

Independent claim 16 has been rejected using the same argument as independent claim 1, and Applicant maintains that independent claim 16 is not obvious in view of Byrne et al. and Kennedy for the same reasons as independent claim 1 that were provided above.

Dependent claims 10-13 and 17 were rejected using the same arguments as dependent claims 2-4, 7, and 8. Applicant maintains that dependent claims 10-13 and 17 are not obvious in view of Byrne et al. and Kennedy for the same reasons as dependent claims 2-4, 7, and 8 that were provided above.

Examiner bears the burden of establishing a prima facie case of obviousness.

The examiner bears the burden of establishing a *prima facie* case of obviousness based on the prior art when rejecting claims under 35 U.S.C. § 103. *In re Fritch*, 972 F.2d 1260, 23 U.S.P.Q.2d 1780 (Fed. Cir. 1992). Only when a *prima facie* case of obviousness is established does the burden shift to the applicant to produce evidence of nonobviousness. *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Rijckaert*, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). If the Patent Office does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to the grant of a patent. *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Grabiak*, 769 F.2d 729, 733, 226 U.S.P.Q. 870, 873 (Fed. Cir. 1985). In response to an assertion of obviousness by the Patent Office, the applicant

may attack the Patent Office's *prima facie* determination as improperly made out, present objective evidence tending to support a conclusion of nonobviousness, or both. *In re Fritch*, 972 F.2d 1260, 1265, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992).

5 With respect to claims 1-20, neither Byrne et al.,
Kennedy, nor a combination of the teachings of the two
references disclose the claimed invention nor do the references
provide any suggestion to motivate one having ordinary skill in
the art to modify the system of Byrne et al. to reach the
10 claimed invention. In fact, the rejection appears to disregard
entire claim elements without justification. In general, the
rejection does not point out the necessary teachings,
suggestions, or incentives to reach the claimed invention.
Hence, the rejection of claims 1-20 does not establish a *prima*
15 *facie* case of obviousness based on the prior art. Therefore,
the rejection of claims 1-20 under 35 U.S.C. § 103(a) has been
shown to be insupportable, and these claims are patentable
over the applied references. Applicant requests the
withdrawal of the rejection.

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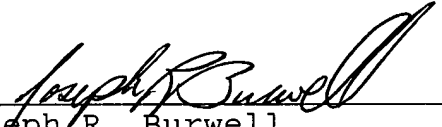
IV. Conclusion

It is respectfully urged that the present patent application is patentable, and Applicant kindly requests a Notice of Allowance.

For any other outstanding matters or issues, the examiner is urged to call or fax the below-listed telephone numbers to expedite the prosecution and examination of this application.

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Respectfully submitted,



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